AMENDMENTS TO THE TITLE:

Please amend the title to read as follows:

--VALVE FOR CONTROLLING A CONNECTION IN A HIGH-PRESSURE FUEL INJECTION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE--

AMENDMENTS TO THE SPECIFICATION:

Page 1, please add the following new paragraphs before paragraph [0001]:

[0000.2] CROSS-REFERENCE TO RELATED APPLICATIONS

[0000.4] This application is a 35 USC 371 application of PCT/DE 2004/001744 filed on August 4, 2004.

[0000.6] BACKGROUND OF THE INVENTION

Please replace paragraph [0001] with the following amended paragraph:

[0001] ~~Prior Art~~ **Field of the Invention**

Please replace paragraph [0002] with the following amended paragraph:

[0002] The present invention is based on a valve for controlling a connection in a high-pressure fluid system, in particular in a fuel injection apparatus for an internal combustion engine[[,]] ~~as generically defined by the preamble to claim 1~~.

Please add the following new paragraph after paragraph [0002]:

[0002.5] Description of the Prior Art

Please replace paragraph [0003] with the following amended paragraph:

[0003] A valve of ~~this kind is~~ **the type with which this invention is concerned,** known from EP 0 840 003 A[[.]] . ~~This valve~~ serves to control a connection in a fuel injection

apparatus for an internal combustion engine[[.]] **and** ~~The valve~~ has a valve member that is guided so that it can slide in the direction of its longitudinal axis, protrudes into a valve pressure chamber, and, in the valve pressure chamber, has a sealing surface at an end extending transversely in relation to its longitudinal axis. The sealing surface of the valve member cooperates with a valve seat extending transversely in relation to its longitudinal axis in order to close an opening encompassed by the valve seat in relation to the pressure chamber. In this case, high pressure prevails in the valve pressure chamber and the opening is adjoined by a duct leading to a low-pressure region; the valve member controls the connection of the valve pressure chamber to the low-pressure region, thus controlling the pressure in the valve pressure chamber. When the valve is open, i.e. when its sealing surface is lifted away from the valve seat, fuel flows out of the valve pressure chamber into the low-pressure region. The outgoing fuel generates forces acting on the valve member in the direction of its longitudinal axis that can cause the valve member to move uncontrollably in the direction of its longitudinal axis. This can make it impossible to precisely control the fuel injection, chiefly the injected fuel quantity, or can even result in a complete functional failure of the valve and therefore of the fuel injection apparatus. In addition, the high flow velocity of the fuel flowing out of the valve pressure chamber into the low-pressure region and the lack of optimal flow guidance in the known valve can lead to cavitation and therefore damage to the valve member and/or the valve seat.

Page 2, please replace paragraph [0004] with the following amended paragraph:

[0004] ~~Advantages of the Invention~~

SUMMARY AND ADVANTAGES OF THE INVENTION

Please replace paragraph [0005] with the following amended paragraph:

[0005] The valve according to the present invention[[,]] ~~with the characterizing features of claim 1,~~ has the advantage over the prior art that the operability of the valve is assured since the fuel flowing out of valve pressure chamber subjects the valve member to ~~at least approximately~~ **substantially** no forces or only slight ones.

Please replace paragraph [0006] with the following amended paragraph:

[0006] Advantageous embodiments and modifications of the valve according to the present invention are disclosed ~~in the dependent claims~~. ~~The~~ **One** embodiment ~~according to claim 2~~ permits a simple design of the pin for achieving the desired action[[.]] **, while** ~~The embodiment according to claim 5~~ permits an at least approximately cavitation-free fluid flow along the valve member and along the valve seat.

Page 3, please replace paragraph [0007] with the following amended paragraph:

[0007] ~~Drawings~~ **BRIEF DESCRIPTION OF THE DRAWINGS**

Please replace paragraph [0008] with the following amended paragraph:

[0008] A number of exemplary embodiments of the present invention are ~~shown in the drawings and will be explained in detail in the description below.~~ **described more fully herein below, with reference to the drawings, in which:**

Please replace paragraph [0010] with the following amended paragraph:

[0010] Fig. 2 shows an enlarged longitudinal section through the valve according to a first exemplary embodiment **of the invention**,

Page 4, please replace paragraph [0015] with the following amended paragraph:

[0015] ~~Description of the Exemplary Embodiments~~

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Page 5, please replace paragraph [0018] with the following amended paragraph:

[0018] At its end oriented away from the bore 30, the spring chamber 46 is adjoined in the valve body 26 by another bore 48 in which a control piston 50 connected to the injection valve member 28 is guided in a sealed fashion. The bore 48 constitutes a control pressure chamber 52 that is delimited by the control piston 50, which functions as a moving wall. The control piston 50 is supported on the valve member 28 by means of a piston rod 51 that is smaller in diameter than, [[it]] and can be connected to, the injection valve member 28. The control piston 50 can be embodied of one piece with the injection valve member 28, but for ease of assembly, is preferably embodied as a separate part that is attached to the injection valve member 28.

Page 10, please replace paragraph [0025] with the following amended paragraph:

[0025] Fig. 3 shows a modified embodiment of the control valve 70 in which the conical valve seat [[87]] **81** and the conical sealing surface 88 of the valve member 72 have been omitted. Instead, the valve member 72 is embodied in the form of a slide valve member for controlling the connection 62. In order to close the connection 62, the end region 75 of the valve member 72 here can plunge into the bore 76 in a sealed fashion[[,]] ~~which closes the~~

~~connection 62~~. If the end region 75 of the valve member 72 has left the bore 76 and is positioned in the valve pressure chamber 77, then the connection 62 is open.

Page 11, please replace paragraph [0026] with the following amended paragraph:

[0026] Fig. 4 shows the control valve 70 according to a second exemplary embodiment in which the design is essentially the same as in the first exemplary embodiment, but the design of the sealing surface 81 has been modified. The pin 83 of the valve member 72 is embodied in the same form as in the first exemplary embodiment. The sealing surface 81 is embodied so that in an outer region 181 starting from its outer edge, the sealing surface 81 approaches the valve seat 79 as it extends radially inward. The region 181 of the sealing surface 81 here is inclined at an angle α that is preferably at least approximately 5° in relation to a radial plane of the longitudinal axis 73 of the valve member 72. The region 181 of the sealing surface 81 has a radial span l1 that is preferably approximately 0.3 mm when a diameter [[d]] of the valve member 72 is approximately 2.5 mm. In a second region 281 adjoining the first region 181, the sealing surface 81 is embodied so that it recedes from the valve seat 79 **as it extends radially inward**. The second region 281 of the sealing surface 81 is inclined at an angle β, which is preferably at least approximately 2°, in relation to the radial plane. The second region 281 of the sealing surface 81 has a radial span l2 that is preferably approximately 0.6 mm. This embodiment of the sealing surface 81 provides it with a flow inlet region in its first region 181 – in which the fuel flowing out of the valve pressure chamber 77 is conveyed into the smallest flow cross section between the sealing surface 81 and the valve seat 79 – and provides it with a flow outlet region in its second region 281 – in

which the fuel is conveyed out of the smallest flow cross section. As in the first exemplary embodiment, the valve seat 79 is embodied as at least approximately planar and lies in a radial plane in relation to the longitudinal axis 73 of the valve member 72. The transition from the outer circumference of the extension 80 of the valve member 72 to the first region 181 of the sealing surface 81 is preferably rounded with a radius R, as shown in Fig. 4. ~~Fig. 5 shows the improved flow path with the valve member 72 according to the second exemplary embodiment. Whereas with the use of the valve member 72 according to the first exemplary embodiment, flow separations occur at the entry of the flow into the narrowest flow cross section between the sealing surface 81 and the valve seat 79, with the use of the valve member 72 according to the second exemplary embodiment, these flow separations either do not occur at all or at least occur only to a limited degree. This reduces flow losses and achieves a cavitation-free flow.~~

Please add the following new paragraph after paragraph [0026]:

[0026.5] Fig. 5 shows the improved flow path with the valve member 72 according to the second exemplary embodiment. Whereas with the use of the valve member 72 according to the first exemplary embodiment, flow separations occur at the entry of the flow into the narrowest flow cross section between the sealing surface 81 and the valve seat 79, with the use of the valve member 72 according to the second exemplary embodiment, these flow separations either do not occur at all or at least occur only to a limited degree. This reduces flow losses and achieves a cavitation-free flow.

Page 12, please replace paragraph [0027] with the following amended paragraph:

[0027] Fig. 6 shows the control valve 70 according to an embodiment that has been modified in relation to the second exemplary embodiment. In this case, the sealing surface 81 on the valve member is embodied as at least approximately planar and lies in a radial plane in relation to the longitudinal axis 73 of the valve member 72. The valve seat 79 is embodied in such a way that in an outer region 179 starting from its outer edge, the valve seat 79 approaches the sealing surface 81 as it extends radially inward. The region 179 of the valve seat 79 is inclined at an angle α, which is preferably at least approximately 5°, in relation to a radial plane of the longitudinal axis 73 of the valve member 72. Starting from the outer edge of the sealing surface 81 of the valve member, the region 179 of the valve seat 79 has a radial span l1 that is preferably approximately 0.3 mm when a diameter d of the valve member 72 is approximately 2.5 mm. In a second region 279 adjoining the first region 179, the valve seat 79 is embodied so that it recedes from the sealing surface 81 **as it extends radially inward**. The second region 279 of the valve seat [[279]] **79** is inclined at an angle β, which is preferably at least approximately 2°, in relation to the radial plane. The second region 279 of the valve seat 79 has a radial span l2 that is preferably approximately 0.6 mm. This design, which is the reverse of the second exemplary embodiment, achieves the same advantages with regard to an optimized flow guidance as the second exemplary embodiment.

Page 14, please add the following new paragraph after paragraph [0032]:

[0033] The foregoing relates to preferred exemplary embodiments of the invention, it being understood that other variants and embodiments thereof are possible within the spirit and scope of the invention, the latter being defined by the appended claims.